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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/060,797

01/29/2002

Ken Sakuma

113197-023

8252

24573

7590

12/30/2004

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EXAMINER

LEE, HWA S

ART UNIT

PAPER NUMBER

2877

DATE MAILED: 12/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/060,797

Applicant(s)

SAKUMA ET AL.

Examiner

Andrew Hwa S. Lee

Art Unit

2877

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 October 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Remarks

1. This Office Action is in response to Applicant's amendment of 10/5/04. Claims 1-16 and 20 have been amended. Claims 1-20 are pending.

Claim Objections

2. Claim 1 is objected to because of the following informalities: In claim 1, "...said **relative** refractive index adjustment area of said waveguide" lacks antecedent basis and it appears that Applicant is intending to recite "said refractive index adjustment area of said waveguide" and will be examined as such. Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. **Claims 1-4, 7, 8, and 10-20** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kondo et al, Patent Abstracts of Japan, Publication No. 11167036 ("PAJ '036" hereinafter) in view of Yoshimura (Patent Abstracts of Japan 07-063936) and Kondo et al (Optic Letters Vol. 23, No. 10, pp. 646-648)

PAJ '036 shows an optical waveguide circuit comprising a coupler/splitter. PAJ '036 does not expressly show adjusting/forming of the refractive index area and the monitoring of the light passing through the waveguide.

Kondo shows a coupler/splitter in a waveguide having a core formed by focusing a laser beam to adjust/form a refractive index area.

Yoshimura shows the production of a waveguide which easily adjusts the coupling rate and branching ratio of a coupler/splitter comprising the steps of:

setting at least one portion between said ports as a refractive index adjustment area (17, 18, 20, 21, 39);

inputting signal light into one port (P1) and monitoring the signal light outputted from other ports (P1' and P2'); and

adjusting optical characteristics of said optical coupler and forming said refractive index adjustment area of said waveguide by adjusting refractive index of said refractive index adjustment area by focusing a laser beam during the monitoring (Abstract).

At the time of the invention, one of ordinary skill in the art would have adjusted the coupling rate and branching ratio of the coupler/splitter in order to fine tune the coupling rate and branching ratio at the desired amounts. One of ordinary skill in the art would have recognized that the principle of using a focused beam to adjust the branching ratio of a coupler/splitter in a plastic waveguide can be used in a glass waveguide. The skilled artisan would have also used a laser beam to adjust the refractive index in the glass waveguide rather than UV light which is

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effective for plastic waveguides since Kondo teaches that laser is effective for glass waveguides and Yoshimura teaches that UV light is effective for plastic waveguides.

5. **Claims 5, 6, and 9** are rejected under 35 U.S.C. 103(a) as being unpatentable over "PAJ '036" in view of Yoshimura as applied to claim 5 above, and further in view of Miura, K., et al., ("Photowritten optical waveguides in various glasses with ultrashort pulse lasers" Applied Physics Letter, Vol. 71, No. 23, December 8, 1997, pp. 3329-3331.)

All the steps of claim 5, 6, and 9 are shown as applied to claim 1 above but does not expressly show the determination of the number of scanings by a femto-second laser beforehand. One of ordinary skill in the art would have deduced from the teachings of Muira, K. that a predetermined number of scanings can be estimated because each scan resulted in a certain amount of change in refractive index and knowing how much of a change in refractive index is desired, the skilled artisan would be able to estimate the number of passes required. Furthermore, Miura, K. teaches that the laser is to be a femto-second laser, thus one of ordinary skill in the art would have used a femto-second laser in order to change the refractive index of the glass waveguide.

Conclusion

Papers related to this application may be submitted to Technology Center (TC) 2800 by facsimile transmission. Papers should be faxed to TC 2800 via the PTO Fax Center located in CP4-4C23. The faxing of such papers must conform with the notice published in the Official

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Gazette, 1096 OG 30 (November 15, 1989). The CP4 Fax Center number is 703-872-9306 for regular communications and for After Final communications.

If the Applicant wishes to send a Fax dealing with either a Proposed Amendment or for discussion for a phone interview then the fax should:

a) Contain either the statement "DRAFT" or "PROPOSED AMENDMENT" on the Fax Cover Sheet; and

b) Should be unsigned by the attorney or agent.

This will ensure that it will not be entered into the case and will be forwarded to the examiner as quickly as possible.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Hwa Lee whose telephone number is (571) 272-2419.

The examiner can normally be reached on M-Th. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank Font can be reached on (571) 272-2415.



Andrew Hwa S. Lee
Patent Examiner
Art Unit 2877

December 26, 2004/ahl